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**Honold, Philipp J.; Nouard, Marie-Louise; Jacobsen, Charlotte**

*Published in:*
Book of Abstracts. DTU's Sustain Conference 2015

*Publication date:*
2015

*Document Version*
Publisher's PDF, also known as Version of record

# Production of omega-3 rich fish oil from by-products of Danish trout farms

P.J. Honold, M.L. Nouard, C. Jacobsen*

DTU FOOD, Division for Food Technology, Research Group for Bioactives – Analysis and Application

*Corresponding author email: chja@food.dtu.dk

Rainbow trout is the main species produced in Danish fresh water farming. Filleting by-products as head, bones, tail and intestine is at present turned into ensilage and sold to the mink industry with low revenue. To create more value from the trout filleting, by-products could be used for the production of fish oil suitable for human consumption. Production of fish oil from by-products involves: mincing of the raw material, heating, separation in a three phased decanter centrifuge, reheating of the oil fraction before a final separation of oil and residual water. The aim of this study is to investigate the effect of the processing temperature during extraction on the oxidative stability of fish oil produced from fish by-products. We investigated the effect of varying processing temperatures (70/90°C) in different steps during extraction. The raw material and crude oil were characterized by lipid content, fatty acid profile, free fatty acids and tocopherol. The oxidative status was assessed by measurement of primary oxidation products (peroxide value) and secondary volatile secondary oxidation products (anisidine value and determination of volatiles by dynamic headspace GC-MS) and an accelerated oxidation test. Secondly, we investigated the effect of temperature on the two fractions processed together. The effect of high and low omega-3 content in the raw material on the oxidative stability was also evaluated. Findings showed that the natural variation between production days influenced the quality of the produced oil to a high extent. The temperature was found to play a minor role regarding oxidative quality of the produced oil. However, the omega-3 fatty acid content of the raw material influenced the oil quality. Oil with a high content of omega-3 fatty acid showed higher degree of oxidation.

References

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